

Work Order ID 76448

76448

Page 1

November-14-11 2:29:16 PM

Item ID: D206-667-103

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Crosstube Fwd

Start Date: 14/11/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 02/12/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: M.C.J

Date: 11/11/14

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

NR1

Stop

NR2

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|---|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr | Revision Nbr | | | | | | | | |
| D206-667-143 | Rev C (DEO) | | | | | | | | |
| DSI9565 | A | | | | | | | | |
| 100 | DOCUMENT CONTROL | 0.00 | | | | | | | |
| *100* | | | | | | | | | |
| DC | Memo | 0.00 | | | | | | | |
| Document Control | Photocopy bluefile and create labels as per PPP D206-667-103 CHG005 | | | | | | | | |
| 110 | Pick Kit | 0.00 | | | | | | | |
| *110* | Packaging | | | | | | | | |
| Packaging | Memo | 0.00 | | | | | | | |
| Packaging | | | | | | | | | |

12-02-23
For MLI 12-2-22

MO 12/2/6

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

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Stop ***NR2***

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|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 120 | | 0.00 | | | | | | | |
| *120* | BENDING MACHINE - CROSSTUBES | | | | | | | | |
| CNC Bend 2 | Memo | 0.00 | | | | | | | |
| CNC Alpha 160 Bender | Bend tube as per Dwg D206-667-143 using CNC bender program | | | | | | | | |
| | | | | | | | | | 12/2/6 |
| | | | | | | | | | |
| 130 | QC15- Crosstube Dimensional Check | 0.00 | | | | | | | |
| *130* | | | | | | | | | |
| QC | Memo | 0.00 | | | | | | | |
| Quality Control | | | | | | | | | |

MO/RN/JW

8/2/06

~~12/10/03~~

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

140

0.00

140

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill all (3) top holes.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill only the top (2) holes.

5-Drill pilot holes as per Dwg D206-667-143. Drill only the top (2) holes.

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-141.

8-C'sink holes as per Dwg D206-667-143. Allow rivet to sit below surface to compensate for paint.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-143 Inside of Cuff(Donot engrave on outside of tube)

10-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143

JW 12-2-7

| W/O: | | WORK ORDER CHANGES | | | | | |
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Run Start ***NR1***

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Stop ***NR2***

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|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

150

Crosstubes Chemical Conversion

0.00

150

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

160

QC3- Inspect Part Finish

0.00

160

QC

Memo

0.00

Quality Control

170

QC5- Inspect part completeness to step on W/O

0.00

170

QC

Memo

0.00

Quality Control

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Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

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|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

180 Outsource process - NDT per QSI038 4.1 0.00

180

Outsource2

Memo

0.00

Outsource process - NDT

CROSSTUBES

190

0.00

190

Packaging

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

200

QC5- Inspect part completeness to step on W/O

0.00

200

QC

Memo

0.00

Quality Control

| W/O: | | WORK ORDER CHANGES | | | | | |
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Run Start ***NR1***

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|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

210

0.00

210

SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 9:30Finish Time: 10:30

PAINT:

Start Time: 3:00Finish Time: 4:00AS 12-2-15

220

QC14- Inspect Spray Paint

0.00

220

QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

12 02 16 (1)

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

230

0.00

230

Crosstubes

Crosstubes

Memo

0.00

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9565 and QSI 015
A/R Proseal 890 Batch: 120072

3- Torque bolts as per dwg

3-Install nut plates as per Dwg D206-667-143. Touch-up rivet heads with Imron paint.

12 12-2-16

240

QC5- Inspect part completeness to step on W/O

0.00

240

QC

Memo

0.00

Quality Control

12 12-02-22 (1)

| W/O: | | WORK ORDER CHANGES | | | | | |
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Run Start ***NR1***

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Stop ***NR2***

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|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

250

Pick Kit

0.00

250

Packaging

Memo

0.00

Packaging

(1X)

SP 12-02-22

260

QC4- 100% Inspect kits for completeness

0.00

260

QC

Memo

0.00

Quality Control

12-02-23 (P)

270

Packaging

0.00

270

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D206-667-103

Location: S

PPP Rev: E

12/2/23 SP PD

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
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Stop ***NR2***

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|--------------------------------|---|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 280 | QC21- Final Inspection - Work Order Release | 0.00 | | | | | | | |
| *280* | | | | | | | | | |
| QC | Memo | 0.00 | | | | | | | |
| Quality Control | | | | | | | | | |

Handwritten: M L J 12/02/23

Handwritten: 12-02-23 (1)

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NOTE: Date & initial all entries

Picklist Print

November-14-11 2:29:27 PM

Page 1

Work Order ID: 76448

76448

Parent Item: D206-667-103

D206-667-103

Parent Item Name: Crosstube Fwd

Start Date: 14/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:F 05.09.01 Add holes for compatibility with Bell SkidtubesKJ/JLM
 IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:
 IPP Rev: H 08.11.17 QC5 was QC6 at step 12 KJ verified by: EC
 IPP Rev:I 08-12-15 add magnobond DD verified by:EC
 IPP Rev J 09.01.06 ECN 08-562 EC verified by: DD
 IPP Rev:K 09-01-19 as per DSI9439 DD verified by:EC IPP REV:L
 11.08.05 PER ECN 11-615 DD VERF:EC

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

D206-667-103TRN

Manufactured

No

110

Each

2.0000

1

1

D206-667-103TRN

Crosstube Turning DetailL

Location

Loc Qty

Loc Code

LG

77788

2

74245

1

74246

1

①

mo

12/2/6

D2873-043

Manufactured

No

230

Each

34.0000

2

2

D2873-043

Nut Plate Assembly

AB

12-2-15

Location

Loc Qty

Loc Code

LG

22

72644

2

75010

20

LG052

79395

12

73605

12

②

D2873-045

Manufactured

No

230

Each

27.0000

2

2

D2873-045

Nut Plate Assembly

AB

12-2-15

Location

Loc Qty

Loc Code

LG052

79318

27

73529

7

74985

20

②

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Picklist Print

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Work Order ID: 76448

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Parent Item: D206-667-103

D206-667-103

Parent Item Name: Crosstube Fwd

Start Date: 14/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D2891-1 Manufactured No

230 Each 40.0000 2 2

D2891-1

**

2.25 Support

As 12-2-16

Location Loc Qty Loc Code

LG 20

75176

20

2

LG052 20

72822

20

D3595-063-395 Manufactured No

230 Each 130.0000 4 4

D3595-063-395

**

RUBBER CUSHION

As 12-2-16

Location Loc Qty Loc Code

LG 129

70975

52

74300

77

4

LG055 1

63368

1

RUBBER CUSHION .63" x 3.95" (4)

MS20601-AD4W8 Purchased No

230 Each 221.0000 14 14

MS20601-AD4W8

**

RIVET

As 12-2-15

Location Loc Qty Loc Code

LG 120450 100

108521

100

14

LG051 121

117106

7

117381

3

117979

3

118572

8

119107

100

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Picklist Print

November-14-11 2:29:27 PM

Work Order ID: 76448

76448

Parent Item: D206-667-103

D206-667-103

Parent Item Name: Crosstube Fwd

Start Date: 14/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

MS21920-20

Purchased

No

230

Each

70.0000

4

4

MS21920-20

Clamp (per MIL-DTL-8783C)

**

AP 12-2-16

Location

Loc Qty

Loc Code

LG050 120475
116799
118649
119386

70
10
10
50

4

AN5-30A

Purchased

No

250

Each

62.0000

4

4

AN5-30A

BOLT

**

14 m/20717 SP SP

Location

Loc Qty

Loc Code

ST339
117514
118451
118706

62
9
3
50

3x

AN5-32A

Purchased

No

250

Each

191.0000

4

4

AN5-32A

Bolt

**

SP 12-02-23 SP
m/20717 1x

Location

Loc Qty

Loc Code

ST339
118422
118628
118983
119328

191
16
50
25
100

3x

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Picklist Print

Page 4

November-14-11 2:29:27 PM

Work Order ID: 76448

76448

Parent Item: D206-667-103

D206-667-103

Parent Item Name: Crosstube Fwd

Start Date: 14/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

AN5-7A

Purchased

No

250

Each

2,841.000

10

10

**

SP

SP

AN5-7A

Bolt

Location

Loc Qty

Loc Code

ST337

15

117313

14

118422

1

ST516

2826

119017

2826

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

0.0000

18

18

**

m 119717

SP

SP

AN960JD516

Washer

AN970-4

Purchased

No

250

Each

125.0000

12

12

**

SP 12-02-22

SP

AN970-4

Washer

Location

Loc Qty

Loc Code

ST342

113

117795

113

ST344

11

115936

11

ST349

1

116900

1

12X

November-14-11 2:29:27 PM

Shop Packet Print

Page 4

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Picklist Print

November-14-11 2:29:27 PM

Page 5

Work Order ID: 76448

76448

Parent Item: D206-667-103

D206-667-103

Parent Item Name: Crosstube Fwd

Start Date: 14/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

250

Each

2,304.000

4

4

MS21042L5

Nut

****SP 12-02-22**

SP

Location

Loc Qty

Loc Code

ST300

804

116105

5

116548

43

117611

52

118179

496

118910

208

ST518

1500

119109

1500

4X

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

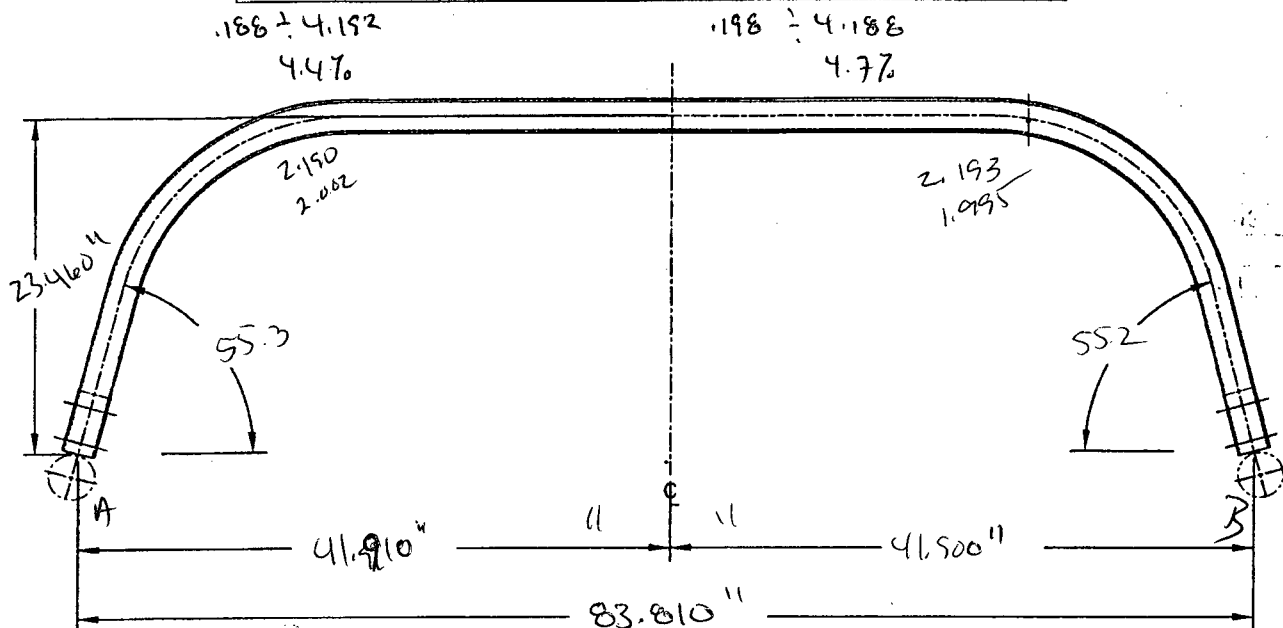
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

| | | | |
|---|---------------|---------------------|--------------|
| DART AEROSPACE LTD | | Work Order: | 96448 |
| Description: Crosstube High Fwd (206L) | | Part Number: | D206-667-103 |
| Inspection Dwg: D206-667-143 | Rev: C | Page 1 of 1 | |

| Required Dimension | Min | Max |
|--------------------|-------|-------|
| Height | 23.39 | 23.65 |
| 1/2 Span | 41.79 | 42.05 |
| Angle | 54 | 56 |
| Total Span | 83.58 | 84.10 |



| Comments | |
|-------------------------------|-----------|
| Since A = 4.47% crushing @ | 11 Passes |
| Since B = 4.77% crushing @ | 11 Passes |

| | |
|-----------------|----------|
| QC15 Inspection | 8 |
| Date | 12/02/06 |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|----------------------------------|------------|----------|
| A | 07.02.06 | New Issue | KJ/JM | |
| B | 09.06.26 | Dimensions updated per Dwg Rev C | KJ | |
| C | 09.10.22 | Minimum height dimension revised | KJ | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| Item | Qty -143 | Part Number | Description |
|------|-------------|----------------|--|
| 1 | X | D206-667-143 | CROSSTUBE ASSEMBLY (206L HIGH FWD) |
| 2 | 1 | D6002-115 | CROSSTUBE |
| 3 | 2 | D2873-043 | NUT PLATE |
| 4 | 2 | D2873-045 | NUT PLATE |
| 5 | 2 | D2891-1 | SUPPORT |
| 6 | 4 | D3595-063-395 | RUBBER CUSHION |
| 7 | 4 | MS21920-20 | CLAMP (OR MS21920-21) |
| 8 | 14 | MS20601AD4W8 | RIVET (OR NAS9302B-4-8) |
| 9 | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE) |

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6002-115
FINISHED LENGTH = 104.98±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-143" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 15.5 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOW COPY
RETURN TO
ENGINEERING
UNCONTROLLED
SUBJECT TO
WITHOUT
WORK ORDER
NO. 76448

060 #1-615
11.07.28

UNDER REVIEW

DEO ATTACHED RELEASED
08/11/12

| | | | |
|------------|---|---|----------|
| C | REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCE (ZN D3-3, C4-3, C5-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4. | RF | 08.11.06 |
| B | ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES | PH | 05.07.26 |
| A | NEW ISSUE | CP | 00.11.17 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | RF | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWN | RF | DRAWING NO. D206-667-143 | |
| CHECKED | RF | REV. C SHEET 1 OF 4 | |
| MFG. APPR. | RF | TITLE CROSSTUBE ASS'Y (206L HIGH FWD) | |
| APPROVED | RF | SCALE NTS | |
| DE APPR. | RF | DATE 08.11.06 | |

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| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

D

C

B

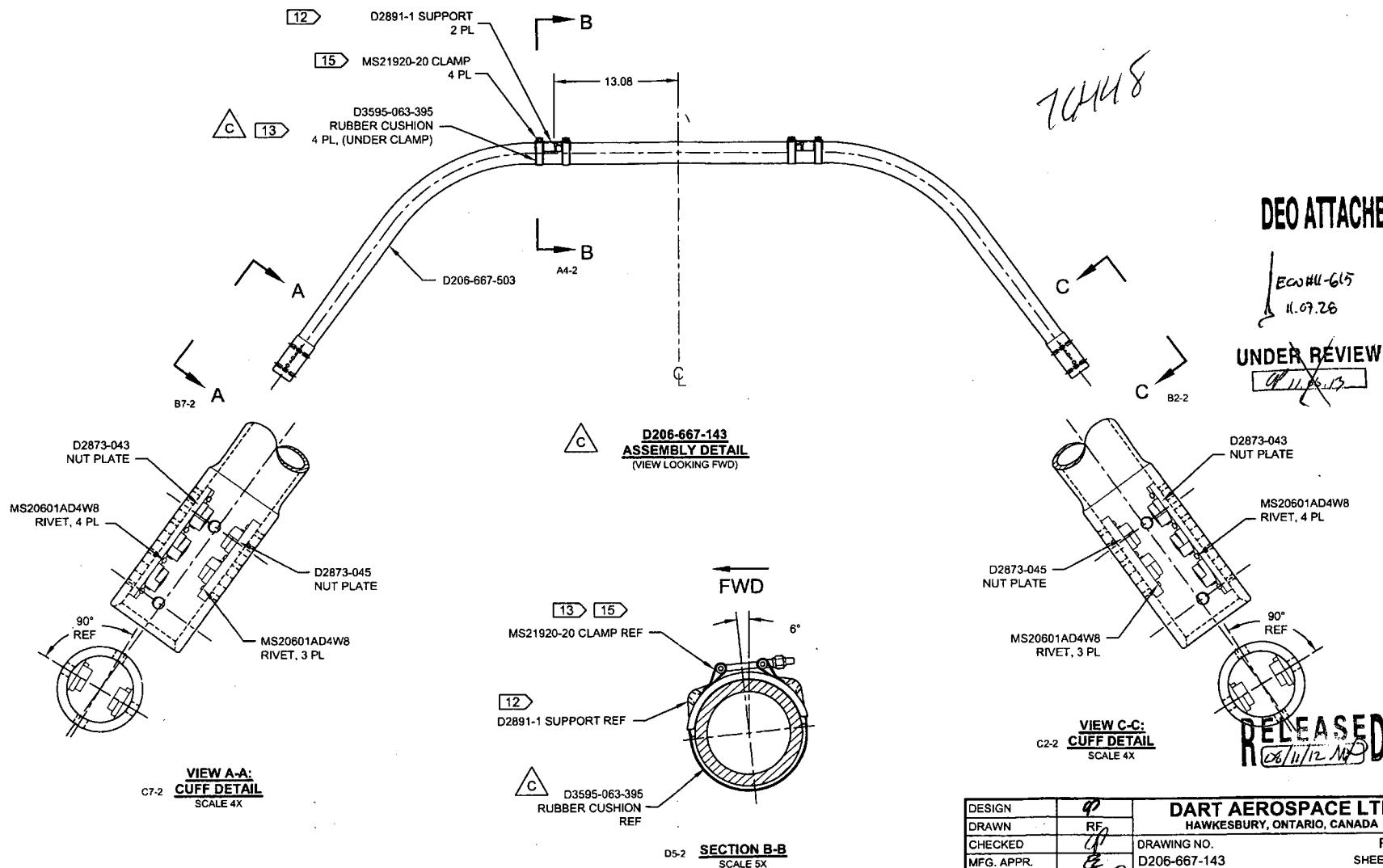
A

D

C

B

A



8 7 6 5 4 3 2 1

| | | | |
|------------|----------|--|--------------|
| DESIGN | 92 | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | 92 | DRAWING NO. | REV. C |
| MFG. APPR. | 92 | D206-667-143 | SHEET 2 OF 4 |
| APPROVED | 92 | TITLE | SCALE |
| DE APPR. | 92 | CROSSTUBE ASS'Y (206L HIGH FWD) | NTS |
| DATE | 08.11.06 | <small>COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> | |

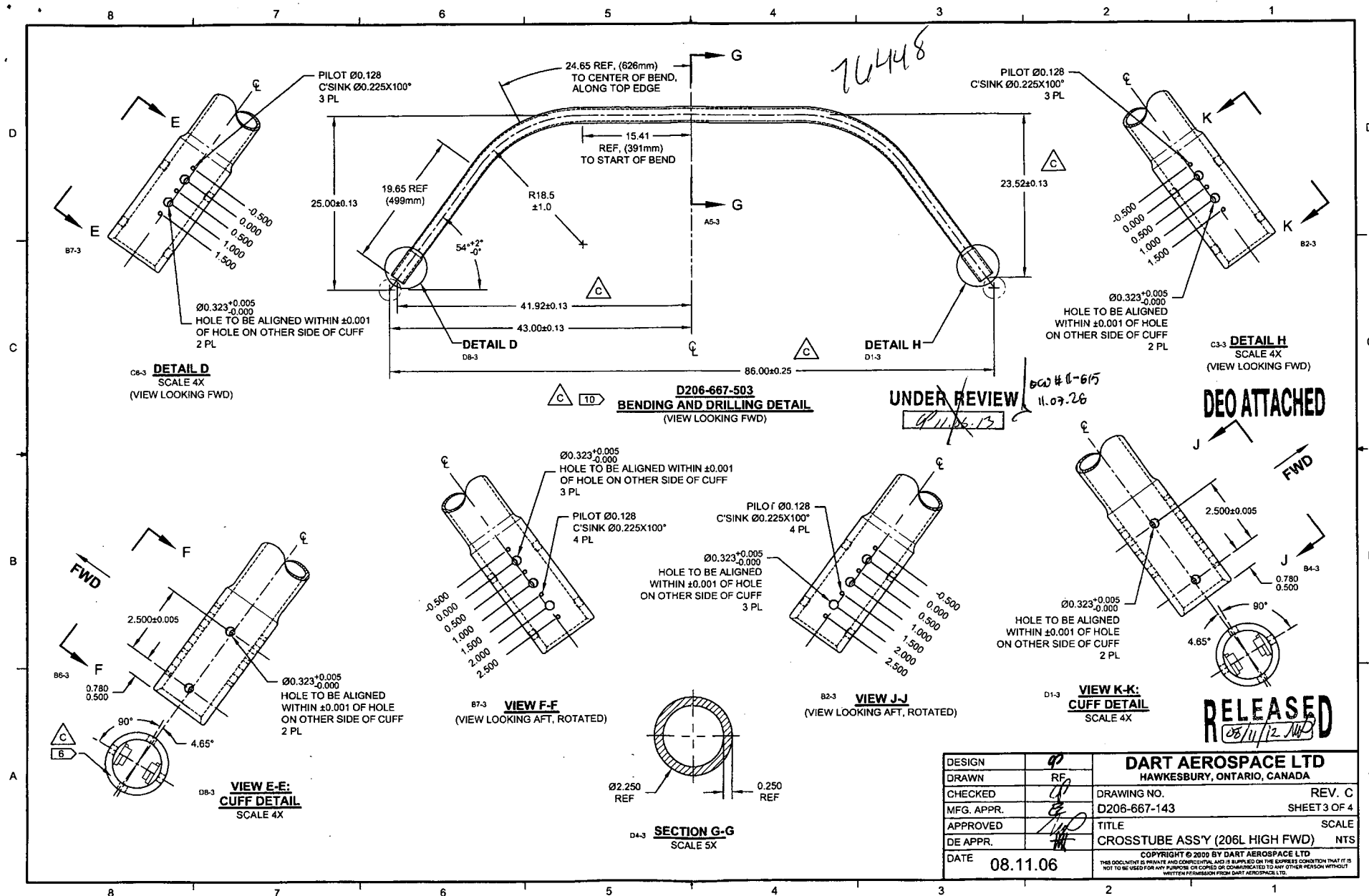
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NOTE: Date & initial all entries



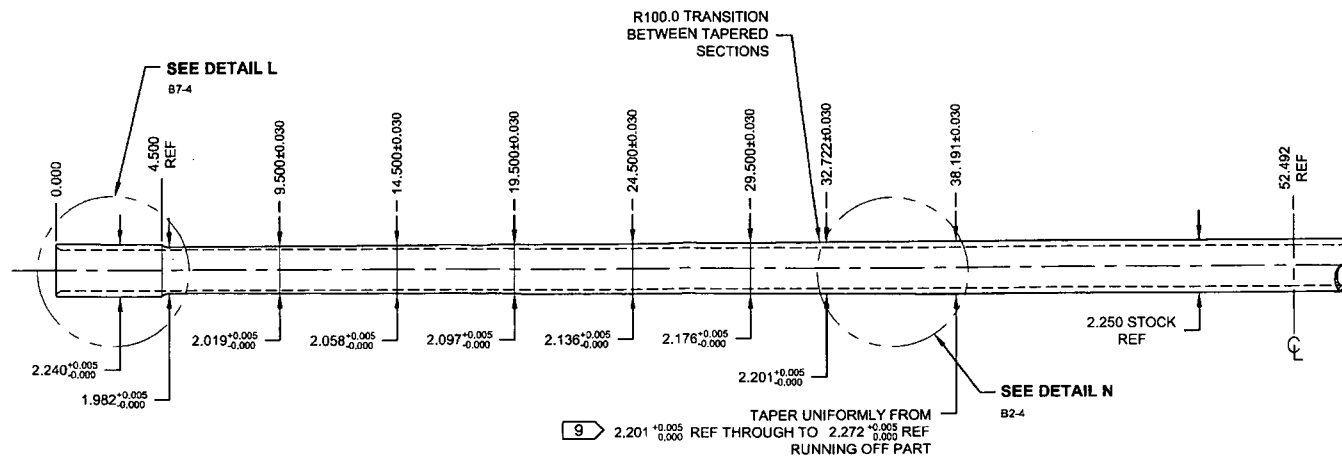
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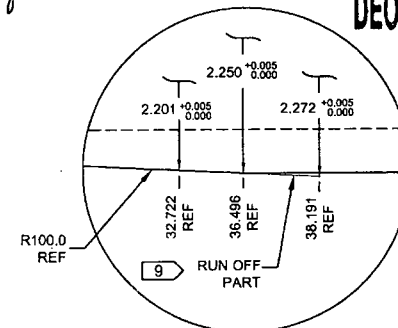
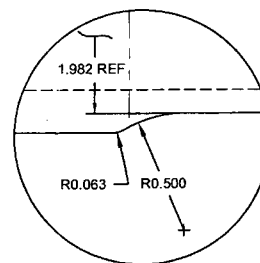
NOTE: Date & initial all entries



REC'D #11-615
11.07.24
UNDER REVIEW
UP 11.06.13

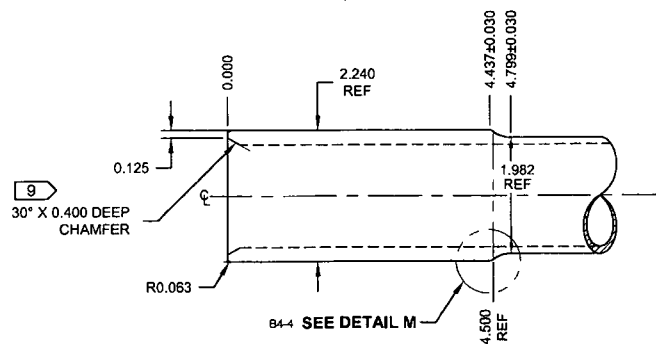
DEO ATTACHED

TURNING DETAIL



DETAIL N:
TAPER RUN-OFF
NOT TO SCALE

RELEASED
08/11/12



DETAIL L:
CROSSTUBE CUFF
NOT TO SCALE

DETAIL M:
CUFF TRANSITION
NOT TO SCALE

| | | | |
|--|----------|--|--------------|
| DESIGN | 9 | DART AEROSPACE LTD | |
| DRAWN | RF | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | RF | DRAWING NO. | REV. C |
| MFG. APPR. | RF | D206-667-143 | SHEET 4 OF 4 |
| APPROVED | RF | TITLE | SCALE |
| DE APPR. | RF | CROSSTUBE ASSY (206L HIGH FWD) | NTS |
| DATE | 08.11.06 | COPYRIGHT © 2006 BY DART AEROSPACE LTD | |
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NOTE: Date & initial all entries

| | | | | | | | |
|-----------------------------|--|-------------------------|---|--|--------------------------------|---------------------------|--------------|
| DRAWING NO. D206-667-143 | TITLE CROSSTUBE ASS'Y (206L HIGH FWD) | REV. C | DART AEROSPACE LTD ENGINEERING ORDER | | D.E.O. NO. D206-667-143-C-1 | SHEET NO. SHEET 1 OF 1 | SCALE NTS |
| DRAWN <i>q</i> | CHECKED <i>ASS</i> | MFG. APPR. <i>JS</i> | APPROVED <i>MD</i> | | DE APPR. <i>MD</i> | | |
| DATE 11.07.15 | DATE 11.07.20 | DATE 11.07.21 | DATE 11/07/21 | | DATE 11.07.21 | | |

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

| Item | Qty -143 | Part Number | Description |
|------|-------------|-----------------|-------------------------------|
| 9 | A/R | PROSEAL 890 B-2 | SEALANT, AMS-S-8802 CLASS B-2 |

WAS:

| | | | |
|---|-----|----------------|--|
| 9 | A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTORON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE) |
|---|-----|----------------|--|

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

12) TO INSTALL D2891-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

16448

RELEASED
2011-07-28
MD

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 12177

PAGE 1 OF 1

CLIENT DART ACROSPACE DATE FEB 10-2012 TIME AM ☒ PM ☐
ATTENTION LINDA / CHANTEL ACUREN JOB NO. 188-12-C0031
ADDRESS 1270 ABELDEEN ST. PO/VO NO. N/A
HAWKESBURY ON. WORK LOCATION SAME
ACCEPTANCE STD ASTM 1417/251-038 REV./DATE 2005
PROJECT F.P.I. ON CROSS TUBES AND MACHINED PARTS
ITEM(S) EXAMINED (4) CROSS TUBES (5) MOUNTS

JOB DESCRIPTION PROCEDURE No. LT0002 REV./DATE 2008 TECHNIQUE No. LT1412 REV./DATE 2008
PART NO. SEE RESULTS MATERIAL ALUMINE ALUMINUM THICKNESS VARIABLE
SCOPE WET FLUORESCENT LIQUID PENETRANT INSPECTION WAS
CARRIED OUT ON 100% EXTERNAL SURFACE.

TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
FAMILY BRAND MAGNAFLUX BLACK LIGHT S/N 16959 ☐ OUTPUT > 1000 μ W/cm² ☐ AMBIENT < 2 fc
PENETRANT 2-L07 MINIMUM DWELL TIME 45 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER H2O MINIMUM DRY TIME >10 MIN. OTHER LABINO
DEVELOPER SKD 52 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N 1098866 CAL DUE DATE JUL 27 2012
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F

RESULTS- ☒ METRIC ☐ IMPERIAL

| | | |
|-------------------------|---|------------|
| 5 MOUNTS - W.O. 77271 | ✓ | |
| 1 CROSS TUBE W.O. 76449 | ✓ | |
| 1 CROSS TUBE W.O. 76448 | ✓ | 5/12/02/10 |
| 1 CROSS TUBE W.O. 76447 | ✓ | |
| 1 CROSS TUBE W.O. 76446 | ✓ | |

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE Andrew Sheldon PRINT ASheldon SIGNATURE DTR # E63807
TECHNICIAN (SIGNATURE): Mike I. Hush REPORT REVIEWED BY:
NAME (PRINT): 1ST TECHNICIAN 2ND TECHNICIAN
CGSB LEVEL 5 SNT LEVEL _____ CGSB LEVEL _____ SNT LEVEL _____
CGSB REG. No 6006 CGSB REG. No _____

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

| Item | Qty -101 | Qty -201 | Qty -103 | Qty -203 | Qty -105 | Qty -205 | Part Number | Description |
|------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|--|
| | X | | | | | | D206-667-101 | CROSSTUBE INSTALLATION, 206A/B HIGH FWD |
| | | X | | | | | D206-667-201 | CROSSTUBE INSTALLATION, 206A/B HIGH AFT |
| | | | X | | | | D206-667-103 | CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD |
| | | | | X | | | D206-667-203 | CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT |
| | | | | | X | | D407-667-105 | CROSSTUBE INSTALLATION, 407 HIGH FWD |
| | | | | | | X | D407-667-205 | CROSSTUBE INSTALLATION, 407 HIGH AFT |
| 1 | 1 | | | | | | D206-667-141 | CROSSTUBE ASSEMBLY, 206A/B HIGH FWD |
| 2 | | 1 | | | | | D206-667-241 | CROSSTUBE ASSEMBLY, 206A/B HIGH AFT |
| 3 | | | 1 | | | | D206-667-143 | CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD |
| 4 | | | | 1 | | | D206-667-243 | CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT |
| 5 | | | | | 1 | | D407-667-145 | CROSSTUBE ASSEMBLY, 407 HIGH FWD |
| 6 | | | | | | 1 | D407-667-245 | CROSSTUBE ASSEMBLY, 407 HIGH AFT |
| 10 | *2 | *2 | *2 | | *2 | | D2891-1 | SUPPORT |
| 11 | | | | *2 | | | D2892-1 | SUPPORT |
| 12 | | | | | | *1 | D2894-1 | SUPPORT |
| 13 | *4 | *4 | *4 | | *4 | | D3595-063-395 | RUBBER CUSHION |
| 14 | | | | *4 | | | D3595-063-450 | RUBBER CUSHION |
| 15 | | | | | | *2 | D3595-075-430 | RUBBER CUSHION |
| 16 | *4 | *4 | *4 | | *4 | | MS21920-20 | CLAMP |
| 17 | | | | *4 | | *4 | MS21920-22 | CLAMP |
| 18 | | | | | | *2 | MS21920-25 | CLAMP (OR MS21920-24) |
| 19 | 4 | 4 | 4 | | 4 | | AN5-32A | BOLT |
| 20 | | | | 4 | | 4 | AN5-34A | BOLT |
| 21 | 4 | 4 | 4 | 4 | 4 | 4 | MS21042L5 | NUT (OR MS21042-5) |
| 22 | 8 | 8 | 8 | 8 | 8 | 8 | NAS1149C0563J | WASHER (OR AN960JD516) |
| 23 | | | | | | *2 | D3190-1 | CHAFING SHIELD |
| 40 | *2 | | *2 | *2 | *2 | *2 | D2873-043 | NUT PLATE |
| 41 | *2 | | *2 | *2 | *2 | *2 | D2873-045 | NUT PLATE |
| 42 | | 2 | | | | | D2872-043 | NUT PLATE |
| 43 | | 2 | | | | | D2872-045 | NUT PLATE |
| 44 | 10 | | 10 | | | | AN5-7A | BOLT |
| 45 | | 10 | | 10 | 10 | 10 | AN5-10A | BOLT |
| 46 | 4 | 10 | 4 | | 4 | | AN5-30A | BOLT |
| 47 | | | | 4 | | 4 | AN5-32A | BOLT |
| 48 | | | 12 | | | | AN970-4 | WASHER (OPTIONAL) |
| 49 | | 6 | | | | | MS21042L5 | NUT (OR MS21042-5) |
| 50 | 10 | 12 | 10 | 10 | 10 | 10 | NAS1149C0563J | WASHER (OR AN960JD516) |
| 60 | | 1 | | | | | D3039-3 | CENTER DRILL (TOOLING, NOT INSTALLED) |

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/-143/-241/-243 & D407-667-145/-245 ASSEMBLIES ABOVE

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Revision: D
Date: 11.05.01